SECTION 2

Fourth Quarter 1999 Sampling Event

2.1 Sampling Activities

Field sampling procedures followed the revised project Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP; EPA 1999a and 1999b, respectively). During this sampling event, field sampling procedures for the additional parameters described below were included with Addendum No. 2 to the QAPP (CH2M HILL 1999c) and Addendum No. 3 to the SAP (CH2M HILL 1999d). The most recent, available water levels from the transducers installed by LADWP were obtained prior to sampling. These values are presented in Table 2-1.

Well purging consisted of removing between three and five well volumes of water at a flow rate between 5 and 12 gallons per minute (gpm) and using the dedicated electric pumps. During purging, pH, temperature, electrical conductivity, and turbidity of the groundwater were measured over time (Table 2-2) to ensure that these parameters stabilized prior to sampling. Following purging, flow rates were lowered to approximately 1 gpm to minimize aeration prior to sampling. Purge water was collected in a vacuum truck and transported to Baker tanks located at the site staging area.

Samples were collected in appropriate containers from polyethylene tubing attached to an adjustable sampling valve. Samples were stored in coolers packed with ice and were shipped the day of sampling by overnight carrier to a CH2M Hill's Quality Assurance Laboratory (QAL).

During the fourth quarter 1999 sample event, analytical parameters consisted of VOCs, SVOCs, dissolved metals, nitrate/nitrite, and additional general water chemistry parameters (chloride, sulfate, hardness, total alkalinity, total dissolved solids [TDS], and total organic carbon [TOC]). Samples were also collected and submitted for hexavalent chromium, methyl tertiary butyl ethylene (MTBE), and perchlorate as outlined in the Addendum No. 2 of the QAPP. Samples collected from these events were analyzed through laboratories in EPA's Contract Laboratory Program (CLP).

State of California and federal MCLs are listed in Table 2-3; Table 2-4 specifies the methods by which the parameters were analyzed and the respective target detection limits. Chain-of-custody procedures and sample documentation were conducted as outlined in the SAP and QAPP. Copies of chain-of-custody documentation for the fourth quarter sample events are provided in Appendix D.

2.1.1 Fourth Quarter

The fourth quarter 1999 sample event was designated as an annual event. During this event, 74 monitoring wells (33 VPBs and 41 cluster wells) were sampled. An additional 10 monitoring wells scheduled for sampling during this event were either dry or had inoperable pumps. A total of 97 samples were collected and analyzed, including samples

representing quality control (QC) samples (field blanks, laboratory blanks, and field duplicates). Samples collected by CH2M HILL were analyzed for TCL VOCs and SVOCs, TAL metals, nitrate and nitrite, inorganics (chloride, sulfate and fluoride), alkalinity, bicarbonate-carbonate, hardness, TDS, TOC, MTBE, hexavalent chromium, and perchlorate through CLP laboratories.

Purge water was collected in a vacuum truck at each monitoring well location where historic VOC concentration exceeded the MCL. The purge water was transported to the staging area at LADWP's Headworks Spreading Grounds, and containerized in Baker tanks for disposal at a later date. Approximately 21,700 gallons of purge water were collected during the fourth quarter sample event.

2.2 Analytical Results

2.2.1 Fourth Quarter

Reported concentrations of TCE at RI monitoring wells ranged from not detected to a high of 3,600 micrograms per Liter (µg/L) during the fourth quarter. Twenty-nine of the 74 RI monitoring wells exhibited sample concentrations of TCE exceeding the MCL of 5 µg/L. Nine of the wells had TCE concentrations greater than 100 µg/L, including one well (CS-VPB-07) with a concentration more than 1,000 µg/L (3,600 µg/L). Nondetectable (ND) concentrations of TCE were observed in 28 of the monitoring wells.

Concentrations of PCE during the second quarter sampling event ranged from not detected to a high of 290 µg/L (CS-VPB-01). Of the 74 RI monitoring wells sampled, 25 had concentrations exceeding the MCL of 5 µg/L, and 28 had ND concentrations of PCE.

During this annual sampling event, MTBE concentrations between 1 and 32 µg/L were detected at six monitoring wells: CS-VPB-06 with 2 µg/L, CS-VPB-11 with 4 µg/L, NH-VPB-01 with 32 µg/L, PO-C03-182 with 2 µg/L, PO-C03-235 with 6 µg/L, and PO-VPB-08 with 1 µg/L. Samples were also analyzed for SVOCs; however, detectable concentrations were not observed at any of the RI monitoring wells.

Nitrate (as NO_3) ranged from less than 1.0 mg/L at CS-C06-278 and NH-CO4-560 to 102 mg/L at PO-VPB-05. Twenty-three of the 74 RI monitoring wells sampled during the fourth quarter exceeded the nitrate MCL of 45 mg/L (as NO_3). The observed number of wells with lower concentrations of nitrate was expected with the inclusion of the deeper cluster wells during the annual event. Table 2-5 presents a summary table of TCE, PCE, and nitrate data from the fourth quarter sampling event. A complete listing of these data, as well as other VOCs for the fourth quarter sampling event, is located in Appendix E. Results of analyses of duplicates and field blanks for this sampling event are found in Appendix F.

Dissolved metals exceeding primary MCLs were observed in eight RI monitoring wells during the fourth quarter of 1999 (Table 2-6). Chromium and hexavalent chromium exceeding the MCL were observed in two wells (CS-VPB-04 and PO-VPB-02), consistent with previous annual events. Iron exceeded the secondary MCL of 300 mg/L in two wells (PO-C03-182 and PO-C03-325). Three wells (PO-C02-205, PO-VPB-05 and PO-VPB-08) exceeded the secondary MCL of 50 mg/L for manganese. One well, NH-C01-325, exceeded the MCL of 2 µg/L for thallium with a concentration of 5 µg/L.